

~~CLAIMS~~

what is claimed is:

1. An affinity-controlling material, wherein a stimulus-responsive polymer and an affinitive substance (ligand) having affinity for a target substance are independently attached, preferably covalently, to a support matrix.

2. The affinity-controlling material as claimed in claim 1, wherein the affinity between the affinitive substance and the target substance is possible to change reversibly by subjecting a mixture of the affinity-controlling material and the target substance in solution to a physical stimulus thereby changing the chemical or physical environment around the affinitive substance provided by the polymer.

3. The affinity-controlling material as claimed in claim 1 or 2, wherein the affinity of the affinitive substance of the target substance is reversibly changed by a physical stimulus while keeping at least one of conditions other than temperature constant.

4. The affinity-controlling material as claimed in claim 1, 2 or 3, wherein said physical stimulus is a temperature change.

5. The affinity-controlling material as claimed in any of claims 1, 2, 3, or 4, wherein the affinitive substance of a target substance does not interact with the stimulus-responsive polymer.

6. The affinity-controlling material as claimed in any
of claims 1 to 5, wherein the bonding ability of the target
substance is controlled depending on the length of a spacer by
which the affinitive substance of the target substance is bonded
5 to the support or the size of the stimulus-responsive polymer.

7. The affinity-controlling material as claimed in any
of claims 1 to 6, wherein the support comprises hydrophilic
porous polymer particles having a uniform particle size produced
10 by the membrane emulsification method and a chemical treatment
with an acidic substance or a basic substance starting with a
monomer having epoxy groups in the side chain.

8. The affinity-controlling material as claimed in any
15 of claims 1 to 7 which is to be used as a chromatographic packing.

9. A method for separating and purifying a target
substance with the use of the affinity-controlling material as
claimed in any of claims 1 to 7.

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